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Mineral Industry Surveys

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TIN IN DECEMBER 1999

Domestic consumption of primary tin in December was estimated by the U.S. Geological Survey to be 1% below that in November and 3% below that of December 1998.

The *Platt's Metals Week* average composite price for tin in December was $3.87 per pound, 1% lower than in November and 8% higher than in December 1998.

Russia's only tin smelter, the Novosibirsk tin combine, increased its tin ingot output in the first 9 months of 1999 by 27% compared with the same period of 1998. The facility was operating at about 50% of capacity in December, and output in 2000 was expected to be 13,000 metric tons of combined metals. The plant also produces tin-based alloys and minor metals such as gallium and indium (Mining Journal, 1999).

Malaysia, the world's foremost tin producer during most of the twentieth century, expects tin mine output of 7,000 tons in 2000, about the same as in 1999. There were 45 active tin mines in Malaysia as of October 1999, which was 15% more than the 39 tin mines operating in January 1999 (Platt's Metals Week, 2000).

The Bolivian Government sold its Vinto tin smelter and Huanuni tin mine for $27 million to Allied Deals Corp. (the United Kingdom). The only other bidder, a consortium of COMSUR, Bolivia's largest mining company, and Britain's CDC Corp., bid $20 million. However, the COMSUR/CDC combine did win exploration rights for the nearby Colquiri tin mine. Vinto has a capacity of 30,000 tons of refined tin annually but is currently operating at less than half that level. Allied officials have given some indication that they plan to boost Vinto's output of low-lead tin and also to invest in Huanuni so as to increase the feedstock for Vinto (Ryan's Notes, 1999).

Kawasaki Steel Corp. (Japan) has acquired a 16% stake in Hainan Haiwoo Tinplate Co., a major Chinese tinplate maker based in Hainan, China. The trading firm Nissho Iwai Corp. (Japan) is increasing its investment share in the same firm to 18% from the present 5%. The Hainan Company, owned by Chinese, Japanese, and South Korean interests, started the manufacture of tinplate in July 1997 to supply local can manufacturers. The company owns a tin electroplating line with an annual capacity of 100,000 tons of tinplate. Its production of tinplate is running at approximately 30,000 tons a year with sales of $23 million. But this is expected to rise to 60-70,000 tons with sales of $40-50 million during 2000. Hainan Island is designated by the Chinese Government as a special economic zone with tax incentives. Value-added tax on processed materials is exempted (American Metal Market, 1999).

A recent report by ITRI Ltd., the United Kingdom-based center for the development and promotion of tin applications, states that worldwide primary tin consumption is about 250,000 tons annually and is expected to increase significantly over the next 5 years. This anticipated increase is largely attributed to a number of new uses for tin products, including lead-free solder, tin ammunition and wheel weights, and zinc stannate fire retardants:

a) Solders already represent the largest single application area for tin, mainly as the traditional 63% tin - 37% lead alloy. Most recently developed lead-free solders contain 95% tin, thus their use as replacements for traditional solders is expected to account for an increase of 10,000 tons of tin annually by 2003.

b) Environmental pressures are leading to new market opportunities for tin as a non-toxic replacement for lead in ammunition and wheel balancing weights. Tin shot cartridges have been available to hunters in Europe for the past three hunting seasons. Already accounting for a tin consumption of over 50 tons annually, the use of tin shot is likely to increase rapidly over the next few years, particularly in England, where a ban on lead shot use for wildfowl hunting in wetlands is expected. What may be an imminent temporary approval of tin as a non-toxic shot material by the U.S. Fish and Wildlife Service could also result in significant tonnage use, as the metal competes in a market which currently offers seemingly less favorable alternatives to lead, such as steel, bismuth, and tungsten—the hardness of steel can damage rifle barrels, while bismuth- and tungsten-based shot are the highest cost products.

c) Current European Union draft legislation will effectively ban the use of lead weights for vehicle wheels by 2001.

d) The use of zinc stannate fire retardants is increasing in a wide range of plastics, rubbers, and other polymers. The non-toxic nature of these additives, combined with their outstanding smoke-suppressant properties, has resulted in a gradual replacement of long-standing flame retardants such as antimony trioxide (Metal Bulletin Monthly, 1999).

Update

On February 4, 2000, the *Platt's Metals Week* composite price for tin was $3.90 per pound.

References Cited

American Metal Market, 1999, Japanese invest in China tinplate: American Metal Market, v. 107, no. 244, December 21, p. 4.

Metal Bulletin, 1999, Kawasaki Steel buys into Chinese tinplate producer: Metal Bulletin, no. 8437, December 23, p. 19.

Metal Bulletin Monthly, 1999, New uses to boost tin consumption: Metal Bulletin Monthly, no. 344, August, p. 32.

Mining Journal, 1999, Russian tin output increase: Mining Journal, v. 333, no. 8563, December 24/31, p. 503.

Platt's Metals Week, 2000, Malaysia to maintain output at 7,000 mt: Platt's Metals Week, v. 71, no. 2, January 10, p. 10.

Ryan's Notes, 1999, Who will sell Vinto's tin: Ryan's Notes, v. 5, no. 52, December 27, p. 4.

TABLE 1
SALIENT TIN STATISTICS 1/

(Metric tons, unless otherwise noted)

		1999		
	1998	November	December	January-December
Production, secondary e/ 2/	16,100	900	900	10,800
Consumption:				
Primary	37,100	3,400 r/	3,360	40,900
Secondary	8,620	875 r/	867	10,300
Imports for consumption, metal	44,000	4,960	NA	NA
Exports, metal	5,020	586	NA	NA
Stocks at end of period	10,700	8,800 r/	8,300	XX
Prices (average cents per pound): 3/				
Metals Week composite 4/	373.26	391.55	386.61	XX
Metals Week New York dealer	261.38	274.19	268.07	XX
London, standard grade, cash	251.00	265.00	259.00	XX
Kuala Lumpur	246.06	259.21	256.31	XX

e/ Estimated. r/ Revised. NA Not available. XX Not applicable.

1/ Data are rounded to three significant digits, except prices.

2/ Includes tin recovered from alloys and tinplate. The detinning of tinplate (coated steel) yields only a small part of the total.

3/ From Platt's Metals Week.

4/ The Metals Week composite price is a calculated formula, not a market price, that includes fixed and finance charges, and a risk factor. It normally is substantially higher than other tin prices.

TABLE 2
METALS WEEK COMPOSITE PRICE 1/

(Cents per pound)

Period	High	Low	Average
1998:			
December	363.97	350.47	357.58
January-December	413.70	350.47	373.26
1999:			
January	353.37	343.72	348.60
February	364.44	351.24	356.57
March	363.63	356.99	361.19
April	377.31	357.08	365.05
May	384.76	373.61	380.66
June	368.44	354.81	360.01
July	362.56	356.00	357.87
August	362.04	355.27	358.10
September	372.30	357.68	364.61
October	383.67	363.53	369.61
November	397.54	385.56	391.55
December	403.52	381.53	386.61

1/ The Metals Week composite price is a calculated formula, not a market price, that includes fixed and finance charges, and a risk factor. It normally is substantially higher than other tin prices.

Source: Platt's Metals Week.

TABLE 3
TINPLATE PRODUCTION AND SHIPMENTS IN THE UNITED STATES 1/

(Metric tons, unless otherwise noted)

Period	Tinplate waste (waste, strips, cobbles, etc.) (gross weight)	Tinplate (all forms) Gross weight	Tin content	Tin per metric ton of plate (kilograms)	Shipments 2/
1998	W	1,700,000	8,900	5.2	2,320,000
1999:					
January	W	127,000	695	5.5	185,000
February	W	135,000	702	5.2	177,000
March	W	143,000	757	5.3	218,000
April	W	144,000	770	5.4	195,000
May	W	148,000	795	5.5	196,000
June	W	144,000	748	5.2	207,000
July	W	154,000	748	4.9	193,000
August	W	172,000	830	4.8	222,000
September	W	166,000	778	4.7	209,000
October	W	144,000	737	5.1	189,000
November	W	143,000	775	5.4	NA
December	W	137,000	745	5.5	NA

NA Not available. W Withheld to avoid disclosing company proprietary data.
1/ Data are rounded to three significant digits.
2/ Shipments data from American Iron and Steel Institute monthly publication.

TABLE 4
U.S. TIN IMPORTS FOR CONSUMPTION AND EXPORTS 1/

(Metric tons)

Country or product	1998	1999 October	1999 November	1999 January-November
Imports:				
Metal (unwrought tin):				
Bolivia	5,160	354	430	3,400
Brazil	4,710	620	656	4,340
Chile	894	490	364	3,730
China	9,870	1,240	1,520	12,900
Hong Kong	840	--	92	261
India	359	--	--	--
Indonesia	7,880	640	640	7,090
Japan	222	40	20	282
Malaysia	1,870	20	100	864
Peru	8,650	785	1,040	9,740
Singapore	822	--	--	60
Thailand	540	--	--	20
United Arab Emirates	100	--	--	--
United Kingdom	790	--	--	41
Vietnam	212	--	--	--
Other	1,060	64	94	530
Total	44,000	4,250	4,960	43,300
Other (gross weight):				
Alloys	1,320	316	84	2,900
Bars and rods	1,160	78	97	813
Foil, tubes, and pipes	3	(2/)	(2/)	1
Plates, sheets, and strip	93	49	20	122
Waste and scrap	4,190	193	118	2,570
Miscellaneous	1,800	255	248	2,090
Total	8,560	891	567	8,500
Exports (metal)	5,020	569	586	6,280

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 5
CONSUMPTION OF TIN IN THE UNITED STATES, BY FINISHED PRODUCT 1/

(Metric tons of contained tin)

Product	1998	1999						
		November			December			January-December total
		Primary	Secondary	Total	Primary	Secondary	Total	
Alloys (miscellaneous) 2/	W	W	W	W	W	W	W	W
Babbitt	1,020	W	W	W	W	W	W	22
Bar tin and anodes	704	20	--	20	20	--	20	244
Bronze and brass	3,610	104	129	233	104	137	241	3,170
Chemicals	8,170	676 r/	W	676 r/	663	W	663	8,140
Collapsible tubes and foil	238	W	W	W	W	W	W	W
Solder	16,900	930	345	1,280	813	325	1,140	14,000
Tinning	1,100	33	--	33	35	--	35	508
Tinplate 3/	8,900	775	--	775	745	--	745	9,080
Tin powder	W	W	--	W	W	--	W	W
White metal 4/	778	W	--	W	W	--	W	W
Other	4,260	264 r/	101 r/	365 r/	384	105	489	6,120
Total reported	45,700	2,800 r/	575 r/	3,380	2,760	567	3,330	41,300
Estimated undistributed consumption 5/	--	600	300	900	600	300	900	9,900
Grand total	45,700	3,400 r/	875 r/	4,280	3,360	867	4,230	51,200

r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other."
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes terne metal.
3/ Includes secondary pig tin and tin components of tinplating chemical solutions.
4/ Includes pewter, britannia metal, and jewelers' metal.
5/ Estimated consumption of plants reporting on an annual basis.

TABLE 6
DEFENSE LOGISTICS AGENCY
TIN STOCKPILE DISPOSALS 1/

(Metric tons)

Period	Monthly disposals 2/
1998:	
December	20
January-December	1,900
1999:	
January	20
February	--
March	5
April	30
May	--
June	20
July	220
August	220
September	220
October	--
November	--
December	--
Total	735

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ These disposals represent only the daily spot sales program, not the long-term dealer contract sales program.

Source: Defense Logistics Agency.